Claim

1. Device for therapeutic and cosmetological photoprocessing of biological tissue, comprising power supply *3* and source of electromagnetic radiation *34* contained in the body, said source made in the form of incandescent lamp *4*, reflector *6* for concentrating said radiation *34* onto the biological tissue *17* to be processed, transparent dielectric *12* in the form of a waveguide connected to a cooling system and in contact with the biological tissue *17* to be processed, as well as a spectral filter, *characterized by* the fact that incandescent lamp *4* is connected to power supply *3* through modulator *30*, which comprises resistometer *38* of the incandescent filament *37* of lamp *4* and power regulator, and the inner surface of reflector *6* consists of mirror surface *7* made with the additional function of returning radiation *34* reflected from the biological tissue being processed back to the biological tissue *17*.

2. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the spectral filter may be made in the form of absorbent filter *8*.

3. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the spectral filter may be made in the form of fluorescent converter *9*.

4. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the spectral filter may be made in the form of reflective coating *7* of reflector *6*.

5. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that transparent dielectric *12* is located in metal mount *13*, fixed inside body *1*, to one side of which metal plate *16*, connected to cooling system *33*, is tightly joined in contact with biological tissue *17*.

6. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that radiation-absorbent filter *8* is made in a form that together with the dielectric forms an optical wave guide with a sandwich structure consisting of fluorescent converter *9*, coolant nonfreezing liquid *10*, and optical thermal insulator *11*.

7. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the region of the inner surface of reflector *6* located above incandescent lamp *4* is shaped as a part of an ellipsoid or sphere with a center of curvature in the center of that facet *36* of the waveguide which is nearest to lamp *4*, and the region of the in-

ner surface of reflector *6* located between incandescent lamp *4* and said facet is inclined to the latter at an obtuse angle.

8. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 7, *characterized by* the fact that the region of the inner surface of reflector *6* located between incandescent lamp *4* and the facet *36* of waveguide *8* closest to it consists of the lateral surface of a frustum of a cone or right tetrahedral pyramid whose minor base is said facet, and the dihedral angle between it and the lateral surface or facet is between 115° and 120°.

9. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that reflector *6* and transparent dielectric *12* are made of two halves with a common axis of rotation *39*, incandescent lamp *4* is located on the inner side of one of the halves of reflector *6*, and each of the halves of transparent dielectric *12* may be made with the function of spectral filter and mounted on the corresponding half of reflector *6* so as to permit placement of biological tissue *17* between the halves of dielectric *12* with the halves of reflector *6* in the closed position.

10. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 9, *characterized by* the fact that the inner surface of reflector *6* with its halves in the closed position constitutes an ellipsoid of revolution, the coil of incandescent filament *37* of lamp *4* is located at one of its foci *47* the axis of which lamp is oriented along the major axis *39* of the ellipsoid, the halves of transparent dielectric *12* are made in the form of sphere segments *44* with bases parallel to the major axis of the ellipsoid and to the axis of rotation of the halves of reflector *6*, the sphere segments are mounted on the halves of the reflector so that their common center coincides with the second focus *43* of the ellipsoid and with the biological tissue *17* located between the sphere segments.

11. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 9, *characterized by* the fact that the inner surface of reflector *6* with its halves in the closed position constitutes the surface of an elliptical cylinder whose generatrix is parallel to the axis of rotation of the halves of reflector *6*, the coil of incandescent filament *37* of lamp *4* is located at the level of one focus of the ellipse, the axis of which lamp is aligned parallel to the generatrix of the elliptical cylinder, and the halves of transparent dielectric *12* are made in the form of halves of cylinder *48* mounted on the halves of reflector *6* so that the axes of said cylinder coincide with the biological tissue *17* located between its halves and the orientation of the genera-

trix of cylinder *48* of dielectric *12* coincide[s] with the orientation of the axis of the coil of incandescent filament *37*.

12. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 9, *characterized by* the fact that the inner surface *7* of reflector *6* with its halves in the closed position constitutes the surface of an elliptical cylinder whose generatrix is parallel to the axis of rotation *39* of the halves of reflector *6*, the coil of incandescent filament *37* of lamp *4* is located at the level of one focus *42* of the ellipse, the axis of which lamp is aligned parallel to the generatrix of the cylinder, and the halves of transparent dielectric *12* are made in the form of right prisms *47* with irregular polygons in their bases, oriented with their lateral edges parallel to the axis of rotation *39* of reflector *6*, and prisms *47* are mounted so that the focal axis *39* of the elliptical cylinder coincides with the biological tissue *17* located between prisms *47*.

13. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 4, *characterized by* the fact that the reflective surface *7* of reflector *6* is made of material that selectively reflects radiation *34* with a wavelength between 600 and 2500 nm.

14. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the number of incandescent lamps *4* or the number of incandescent filaments *37* in one lamp *4* may be greater than one, and incandescent filaments *37* may be flat.

15. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 9, *characterized by* the fact that coolant nonfreezing liquid *10* additionally possesses the qualities of absorbing radiation or re-emitting radiation in a different part of the spectrum and is placed in tube *22* connected to pressurizing pump *33*.

16. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the space within reflector *6* is connected via an air line to air compressor *31*.

17. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that cooling system *33* of transparent dielectric *12* and the metal plate may contain Peltier elements *14*.

18. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 3, *characterized by* the fact that fluorescent converter *9* and optical thermal insulator *11* forming the sandwich structure are made of ruby or sapphire with titanium and optical glass, including quartz glass, respectively.

19. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that it is additionally fitted with a system for water or air cooling of the body.

20. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 3, *characterized by* the fact that the bulb of incandescent lamp *4* and/or tube *5* surrounding bulb *4* are additionally made with the function of fluorescent converter.

21. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that incandescent filament *37* of lamp *4* constitutes a flat emitter whose plane is parallel to the plane of the biological tissue to be processed, and the part of the inner surface of reflector *6* located above the lamp is at a distance no less than $1.2d$ from the waveguide facet *36* nearest to lamp *4*, where *d* is the outer diameter of the lamp bulb.

22. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that the radiation-absorbing filter is made in the form of a sandwich structure with the function of waveguide for radiation from lamp *4* to biological tissue *17* and back and formed, in the direction perpendicular to the surface of the biological tissue, of a frustum of a tetrahedral pyramid *51* made of transparent material with an index of refraction no less than 1.76 whose major base faces lamp *4*, water at a temperature of 1°C to 10°C, and a cubical transparent dielectric in contact with the biological tissue and formed, in a direction parallel to the surface of the biological tissue, of the same frustum of a tetrahedral pyramid *51*, water at a temperature of 1°C to 10°C, and the inner surface *52* of the reflectively coated tip.

23. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that transparent dielectric *12* is located in a metal mount equipped with a cooling system employing liquid at a temperature of –1°C to –18°C.

24. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that it is additionally equipped with a feedback system whose circuit incorporates a patient pain threshold sensor, incandescent filament *27* of lamp *4*, and power supply *29*.

25. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that it is additionally equipped with a light interrupter controlled by the patient's pain threshold or by a pain sensor in the form of an

iris sensor or blood flow sensor.

26. Device for therapeutic and cosmetological photoprocessing of biological tissue per claim 1, *characterized by* the fact that power supply *29* is equipped with a battery.

27. Method of therapeutic or cosmetological photoprocessing of skin, in which skin *17* is precooled, and then, while cooling continues, irradiated with light *34* from incandescent lamp *4*, *characterized by* the fact that, to accomplish photodestruction of hair bulb *35*, irradiation is performed in two phases, the first of which is intended to preheat dermis *17* to a temperature not exceeding the denaturing point and lasts 0.1-100 s in the 1100-2500 nm band with a peak in the 1300-1400 nm region and power density of 10-60 W/cm^2, and the second, which immediately follows the first, is intended to destroy hair bulb *35* and lasts 0.05-10 s in the 600-1200 nm band with a peak in the 600-1000 nm region and a power density of 80-800 W/cm^2.

28. Method of therapeutic or cosmetological photoprocessing of skin, in which skin *17* is precooled, and then, while cooling continues, irradiated with light *34* from incandescent lamp *4*, *characterized by* the fact that, to accomplish photodestruction of hair bulb *35*, irradiation lasts 0.05-10 s in the 600-1200 nm band with a peak in the 600-1000 nm region and a power density of 80-800 W/cm^2.

29. Method of therapeutic or cosmetological photoprocessing of skin, in which skin *17* is precooled, and then, while cooling continues, irradiated with light *34* from incandescent lamp *4*, *characterized by* the fact that, in order to accomplish photocoagulation of blood vessels or veins, irradiation is performed in two phases, the first of which is intended to preheat dermis *17* to a temperature not exceeding the denaturing point and lasts 0.1-100 s in the 500-2500 nm band with a peak in the 700-1500 nm region and power density of 1-50 W/cm^2, and the second, which immediately follows the first, is intended to coagulate the vessel or vein and lasts 0.05-1 s in the 400-1200 nm band with a peak in the 500-1100 nm region and a power density of 10-500 W/cm^2.

30. Method of therapeutic or cosmetological photoprocessing of skin, in which skin *17* is precooled, and then, while cooling continues, irradiated with light *34* from incandescent lamp *4*, *characterized by* the fact that, in order to selectively damage collagen in dermis *17* to stimulate its regeneration or in order to selectively damage subcutaneous fat, irradiation is performed with light in the 600-2500 nm band with a duration of 0.1-1000 s and a power density of 0.1-500 W/cm^2.

31. Method of therapeutic or cosmetological photoprocessing

of skin, in which skin *17* is precooled, and then, while cooling continues, irradiated with light *34* from incandescent lamp *4*, *characterized by* the fact that transparent dielectric *12* and metal plate *16* of the device per claim 5 are brought into thermal contact with skin *17*, and then, simultaneously with irradiation or in the intervals between irradiations, the device is moved along the surface of skin *17* so that a new unirradiated area of skin *17* first contacts metal plate *16* and then transparent waveguide *12*.